LIVING GASTROPOD SPECIES COLLECTED FROM BIRD FEATHERS

K. Bába

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Abstract: 9 aquatic gastropods and 3 undetermined gastropod eggs were found in the feathers of 9 bird species collected as part of the 25 year-bird capture work of Dr. József Rékási and the preparator works of József Siprikó. So far no definite conclusions could have been made regarding the expansion of the aquatic gastropods via the transportation of birds by a simple comparison of the distributional areas of the birds and the gastropods collected. This requires further investigations via the recapturing of ringed birds.

K. Bába, H-6720 Szeged, Vár u.6., Hungary

Introduction

There are several options for gastropods to expand their distribution areas. Many terrestrial and aquatic gastropods managed to expand their areas of distribution as a result of the gradual warming of the climate following the Pleistocene. (Brohmer *et al.* 1960). However, rivers also play an important role in the expansion and redistribution of terrestrial gastropods as well (Bába 1978, 1982), the final outcome of which is largely influenced by the climatic conditions as well (Bába 1979). The soil, humidity and climatic conditions of the plant communities along with their area of geographical expansion can be regarded as further important factors (Bába 1986).

The expansion of aquatic gastropods is feasible via transportation by the rivers. Their floodplains used to expand over large areas before the river control works. The majority of these gastropods managed to inhabit and survive in the minor ponds, lakes and marshy areas under relatively permanent water coverage after the river regulations. The construction of an artificial network of channels further enhanced the expansion of aquatic gastropods. A good example is the species *Lithoglyphus naticoides* (Pfeiffer 1828) which managed to make its way as far as the Baltics and to Belgium and France towards the west between 1921-1924 (Brohmer *et al.* 1960).

Theoretically speaking the migration of birds may serve as another possible tool for the expansion of aquatic gastropods, in other words on their way from the summer hatching areas down to their winter habitats. Aquatic gastropods found in wild fowl feathers might help us to elucidate something about this previously mentioned factor.

Materials and method

It was the birdman Dr. József Rékási who happened to come across some living aquatic gastropods in the feathers of wild fowl in the county of Békés as part of his bird catching and delousing works between 1964-1981. Species collected before 1970 were determined by the famous Hungarian malacologist Dr. Andor Horváth associate professor and were published in the dissertation of Dr. Rékási (Rékási 1970). Gastropod species from specimens of garganey have come to light during the preparation works of József Siprikó at the Department of Zoology, University of Szeged, Gyula Juhász Teacher's Training College. The author is really grateful for the utilization of their data in this work.

Gastropods found

Specimens and eggs of living aquatic gastropods have been collected from 8 different wild fowl species. While József Rékási managed to collect 29 aquatic and terrestrial gastropods from the stomach of 17 wild fowl species through the course of his 25 year bird-catching work (Rékási and Richnovszky 1974) 8 aquatic gastropod species have come to light from the feathers of 8 birds. In three cases he also managed to collect undetermined gastropod eggs.

The following avian orders and families yielded specimens of living gastropods, with their distributional areas marked:

Ordo: Ciconiiformes, Familia Ardeidae: *Ardea cinerea* Linné 1758, Mosztonga 10/03/1965 *Theodoxus danubialis* (C. Pfeiffer 1828) 2 specimen. The hatching area of the bird is NE Europe with winter habitats in South and Western Europe and Northern Africa. The gastropod *Theodoxus* is Ponto-Mediterranean, Ponto-Pannonian (Bába 2002).

Familia: Ciconiidae: *Ciconia ciconia* (Linné 1758) Bácsalmás 20/08/1964 4 gastropod eggs in the feather and one specimen of *Viviparus acerosus* (Bourguignat 1862).

The bird *Ciconia* is Holarctic (Americas, Eurasia) hatching in Europe, Denmark and Turkey and spending the winter in Africa. The gastropod *Viviparus* is Ponto-Mediterranean (Bába 2003).

Ordo: Anseriformes. Família: Anatidae; *Anas platyrhynchos* Linné 1758. Katymár-Fekete böge 16/08/1977. 1 *Valvata* specimen, 2 *Viviparus contectus* (Millet 1813). The bird *Anas* can be found in Eurasia, Iceland, Greenland and Northern America. Hatching sites are the areas of Scandinavia and Northern Europe. The winter habitat is in Northern Africa. The gastropod *Viviparus* is West-Siberian including Europe. The other species of the family Anatidae investigated is *Athya ferina* (Linné 1758), Madaras-Priszpa Pond 10/09/1971. This species started to expand from the steppe areas of Eastern Europe towards Western and Central Europe as well as Southern Europe a hundred years ago. It resides in France, Spain, and Northern Africa up to the delta of the river Nile as well as Afghanistan and Northern Indian during the winter. 13 specimens of *Lithoglyphus naticoides* (C. Pfeiffer 1828) and 1 specimen of *Valvata piscinalis* (O.F. Müller 1774). have been collected from the feathers. The gastropod *Lithoglyphus* is Ponto-Caspian. The species *Valvata* has a distributional area ranging from Northern Europe to Southern and Western Europe with a refugium in Turkistan thus it is Central Asian (Bába 2003).

Three gastropods have been found from the feathers of the third Anatidae: *Anas querquedula* Linné 1758. 08/05/1984. Mindszent, male bird: *Valvata piscinalis* (O.F. Müller 1774) 173 pcs., *Gyraulus albus* (O.F. Müller 1774) 6 pcs., *Lymnaea peregra* (O.F. Müller 1774) 1 pc. The bird *Anas* inhabits the mountain woodlands of Eurasia up to the zone of the steppes. The species *Valvata piscinalis* has been mentioned earlier the species *Gyraulus* and *Lymnaea* are East Siberian with the latter having an area of distribution in N Africa as well.

Ordo: Galliformes. Familia: Phasianellidae; *Phasianus colchicus* Linné 1758 Kunbaja 01/12/1981 in the reed. From the feathers the following gastropods were collected: *Physa fontinalis* (Linné 1758). The bird *Phasianus* can be found in Eurasia from the river Amur with sporadic occurrences in the Americas and a Holarctic zoogeographical distribution. It was naturalized to Europe by the Romans and evolved as the hybrid of several subspecies. The gastropod *Physa* is widespread in the Palaearctic and the Americas: Holarctic.

Ordo: Gruiformes. Familia: Rallidae. *Fulica atra* Linné 1758. Bácsalmás-Sóstó 11/11/1969 with 9 gastropod eggs and 2 *Lymnaea stagnalis* in its feathers. The bird *Fulica* is widespread in Europe and Asia residing in Northern Africa for the winter. The gastropod *Lymnaea* is Holarctic; with occurrences in Europe, Asia and the Americas.

Ordo: Lariformes. Familia Laridae. *Larus ridibundus* Linné 1758. Bácsborsod, Kígyóspatak 10/12/1970. Distributed in the temperate and cold zone of Eurasia up to Iceland , residing in S Europe, N Africa and Turkey in the winter. Hatching areas are in Iceland and Scandinavia. From the feathers 4 *Bithynia tentaculata* (Linné 1758) were collected. The gastropod is Central Asian.

Ordo Columbifornes. Familia; Columbidae. *Streptopelia decaocto* (Frivaldszky 1838) Bácsalmás inner areas 25/04/1968. 23 *Helicella obvia*, (Menke 1828) were collected from the stomach, 2 juvenile ones were still alive following the autopsy as well. A further specimen of *Vallonia pulchella* (O.F. Müller 1774) have come to light from the stomach alive as well.

The denotation of the distributional area enables us to examine the possible transportation effect of birds on aquatic gastropods. The above mentioned birds and gastropods have different areas of distribution. The distribution area of the species *Pleysa fontinalis* is the same as that of *Phasianus*. However this overlap might be the outcome of human activities as well via naturalization. It must be noted as well that *Phasianus* is not a wild fowl thus it can serve as a transportation medium for aquatic gastropods occasionally only. The situation is completely different for the species *Anas querquendula* Linné 1758 and the gastropod species *Gyraulas albus* and *Lymnaea peregra* collected from its feathers. Here the distribution area of the bird is the same as that of the gastropods.

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